

PROJECT SUMMARY SHEET

Project Title: English Coulee Watershed Implementation Phase 1

Lead Project Sponsor:

Grand Forks County Soil Conservation District
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State: North Dakota

Watershed: Turtle River

Hydrologic Unit Code: 09020301

High Priority Watershed: Yes

Project Type

Watershed

Waterbody Types

Lakes/Reservoirs

Rivers

Streams

Wetlands

NPS Category

Agriculture

Project Location: **Latitude:** 47.91111 **Longitude:** -97.07306

Summarization of Major Goals:

The primary goal of this project is to achieve an improving trend towards fully supporting but threatened status for recreational use and aquatic life at all sampling sites within the English Coulee Watershed through implementation of BMPs.

Project Description:

This project will implement systematic BMP's, including but not limited to the following: rotational grazing systems, water tank use, cover crops, and updated septic systems. The practices will help reduce non-point source pollution and to restore the English Coulee to fully supporting but threatened status for recreational use and aquatic life. These efforts achieve declining trends in the E. coli concentrations in the English Coulee.

Funding:

FY2016 319 funds requested: \$140,257.90

Match: \$156,638.60

Other Federal Funding: \$12,500.00

319 Funded Part-time Personnel: 1

Total Project Cost: \$309,396.50

2.0 STATEMENT OF NEED**2.1 Project Reference**

Based on the 2014 Section 303(d) List of Impaired Waters Needing TMDLs (NDDoH, 2014), the North Dakota Department of Health (NDDoH) has identified three impaired segments in the English Coulee Watershed (Figure 1). One segment is an 8.48 mile reach (ND-09020301-002-S_00) located at its confluence with a tributary upstream from Grand Forks, ND downstream to its confluence with the Red River of The North (Lower Reach). This segment is not supporting fish and other aquatic biota due to dissolved oxygen, total dissolved solids, sedimentation/siltation, and selenium and not supporting recreation due to sedimentation/siltation and Escherichia coli (E. coli) bacteria.

A 12.1 mile segment (ND-09020301-005-S_00) of the English Coulee from its confluence with a major control structure, downstream to its confluence with a tributary that is upstream from Grand Forks, ND (Middle Reach) as not supporting fish and other aquatic biota due to selenium, dissolved oxygen, and total dissolved solids and not supporting recreation due to E. coli bacteria.

A 14.08 mile segment (ND-09020301-006-S_00) from its headwaters, downstream to a major control structure as not supporting fish and other aquatic biota due to total dissolved solids, dissolved oxygen, and selenium and not supporting recreation due to E. coli bacteria.

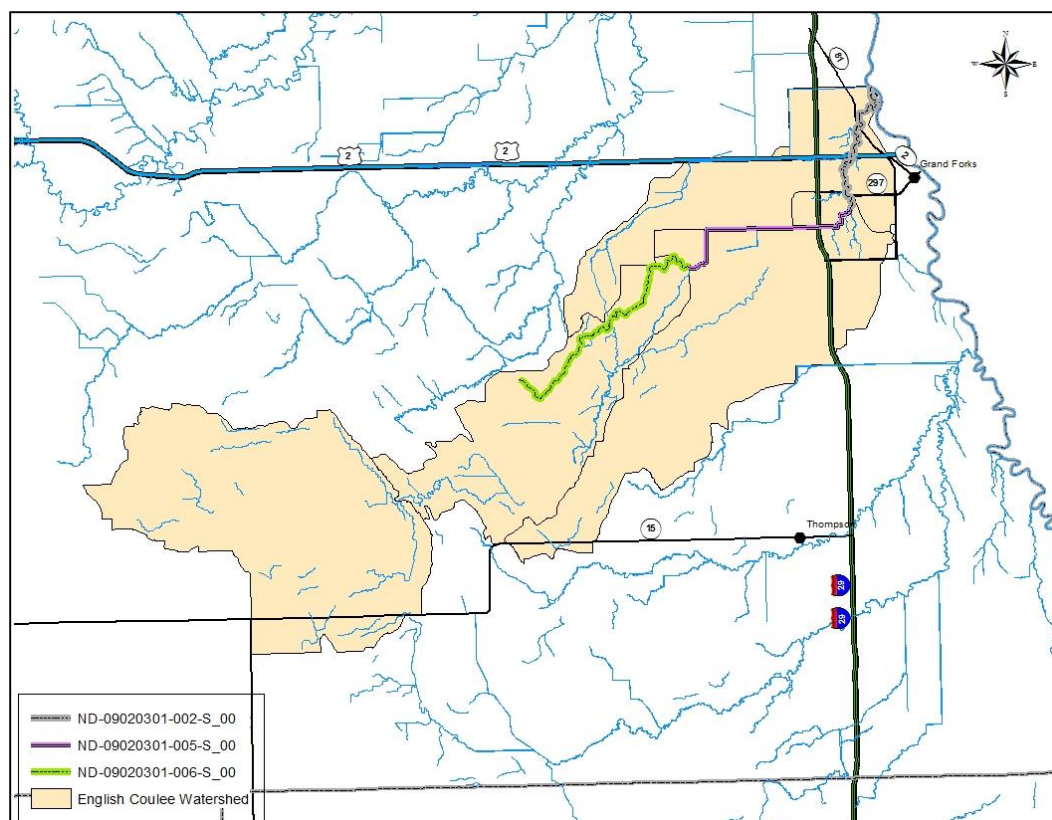


Figure 1. English Coulee 303(d) Listed Impaired Reaches.

2.2 Watershed Description

The English Coulee (09020301) is a Class III stream. The water quality of a Class III stream shall be suitable for agricultural and industrial uses. Streams in this class generally have low average flows with prolonged periods of no flow. During periods of no flow, they are limited value for recreation and fish and aquatic biota. The quality of these waters must be maintained to protect secondary contact recreation uses (e.g., wading), fish and aquatic biota and wildlife uses (NDDoH, 2014).

Table 1. North Dakota Bacteria Water Quality Standards for all Streams.

Parameter	Standard	
	Geometric Mean ¹	Maximum ²
E. coli Bacteria	126 CFU/100 mL	409 CFU/100 mL

¹Expressed as a geometric mean of representative samples collected during any consecutive 30-day period

²No more than 10 percent of samples collected during any consecutive 30-day period shall individually exceed the standard.

In addition, all streams in North Dakota have a numeric bacteria water quality standard. The numeric criteria for E. coli bacteria is defined as not to exceed 126 colony forming units (CFU) per 100 mL as a geometric mean of representative samples collected during any 30-day consecutive period, nor shall more than ten percent of samples collected during any 30-day consecutive period individually

exceed 409 CFU per 100 mL. This standard shall apply only during the recreation season of May 1 to September 30 (NDDoH, 2014).

2.3 **Maps**

An Annualized Agricultural Nonpoint Source Pollution (AnnAGNPS) model was developed for the English Coulee watershed. The AnnAGNPS model uses soils, fertilization rates, cropping systems, elevation, land use, and precipitation data, etc. to 1) characterize the size and shape of the watershed and 2) identify “high priority areas” that are potentially the most significant sources of nutrients (N and P) and sediment in the target watershed. The results of the AnnAGNPS model will be used to target technical and financial assistance for the implementation of Best Management Practices (BMPs) in the English Coulee watershed. Appendix A features the AnnAGNPS priority areas in English Coulee watershed. Emphasis will be placed on the AnnAGNPS priority areas that are crosscut by or adjacent to the English Coulee or its tributaries.

2.4 **Watershed Description**

The English Coulee watershed (09020301) encompasses approximately 134 square miles or nearly 85,813 acres and is located within Grand Forks County (Figure 1). The English Coulee watershed begins in western Grand Forks County and runs east towards the city of Grand Forks, ND. English Coulee has a modified hydrology due to a diversion that runs north of the city. The natural stream reach travels through the city of Grand Forks and only receives base flow throughout the year. After the English Coulee flows through town it dumps into the Red River of the North.

The English Coulee watershed lies within three Level IV ecoregions Glacial Lake Agassiz Basin (48a), Sand Deltas and Beach Ridges (48b) and Saline Areas (48c). Glacial Lake Agassiz Basin ecoregion (48a) is comprised of thick beds of glacial drift overlain by silt and clay lacustrine deposits from glacial Lake Agassiz. The topography of this ecoregion is extremely flat, with sparse lakes and pothole wetlands. Tallgrass prairie was the dominant habitat prior to European settlement and has now been replaced with intensive agriculture. Agricultural production in the southern region consists of corn, soybeans, wheat, and sugar beets.

The Sand Deltas and Beach Ridges ecoregion (48b) disrupts the flat topography of the Red River Valley. The beach ridges are parallel lines of sand and gravel that were formed by wave action of the contracting shoreline levels of Lake Agassiz. The deltas consist of lenses of fine to coarse sand and are blown into dunes.

Saline Area (48c) is characterized by salty artesian groundwater flowing to the surface through glacial till and lacustrine sediments from underlying beds of Cretaceous sandstone. Areas of heavily saline soils are primarily grazed, while moderate salinity soils are planted into sunflowers, sugarbeets, and potatoes (USGS, 2006).

Grand Forks County has a subhumid climate characterized by warm summers with frequent hot days and occasional cool days. Average temperatures range from 14 ° F in winter to 65° F in summer. Precipitation occurs primarily during the warm period and is normally heavy in later spring and early summer. Total annual precipitation is about 18 inches.

The dominant land use in English Coulee watershed is row crop agriculture. According to the 2014 National Agricultural Statistical Service (NASS, 2014) land survey data, approximately 65 percent of the land is cropland, 15 percent is tame/reseeded grasses, 13 percent is bare/roads/developed, 3 percent water/wetlands and the other 4 percent comprised of trees/shrubs, native grassland, and alfalfa. The majority of the crops grown consist of soybeans, spring wheat, other hay/non alfalfa, dry beans and corn.

2.5 Watershed Water Quality

Within the English Coulee watershed, E. coli bacteria were collected at six sites (Figure 2). Data were collected during the recreation season of May 1 through September 30 in 2008 and 2009. Recreational beneficial use attainment was determined for each site and is summarized in Table 2. In addition to the water quality sites, ten sites were selected and sampled for macroinvertebrates and thirty sites were assessed for riparian bank stability.

Table 2. Summary of E. coli Bacteria Data for Sites 385421, 385422, 385424, 385425, and 385426 Collected in 2008 and 2009.

Water Quality Monitoring Site	Upstream=====>Downstream					
	385421	385422	385423	385424	385425	385426
May						
Geometric Mean	16	17	32	29	44	24
% Exceeded 409 CFU/100 mL	0%	0%	7%	6%	0%	0%
Recreational Use Assessment	FS	FS	FS	FS	FS	FS
June						
Geometric Mean	57	33	48	119	46	30
% Exceeded 409 CFU/100 mL	0%	0%	10%	20%	0%	0%
Recreational Use Assessment	FS	FS	FS	FSbT	FS	FS
July						
Geometric Mean	632	45	68	350	146	112
% Exceeded 409 CFU/100 mL	57%	13%	13%	57%	25%	13%
Recreational Use Assessment	NS	FSbT	FSbT	NS	NS	FSbT
August						
Geometric Mean	192	28	204	999	155	99
% Exceeded 409 CFU/100 mL	25%	0%	50%	75%	25%	13%
Recreational Use Assessment	NS	FS	NS	NS	NS	FSbT
September						
Geometric Mean	289	122	212	865	97	171
% Exceeded 409 CFU/100 mL	40%	20%	20%	70%	20%	20%
Recreational Use Assessment	NS	FSbT	NS	NS	FSbT	NS

FS – Fully Supporting; FSbT- Fully Supporting but Threatened; NS – Not Supporting; INSFD – Insufficient Data

The recreational use assessment data indicates that the months of July through September are exhibiting an increase in E. coli bacteria concentrations. Initial conclusions would indicate the presence of riparian grazing during the months of high concentrations.

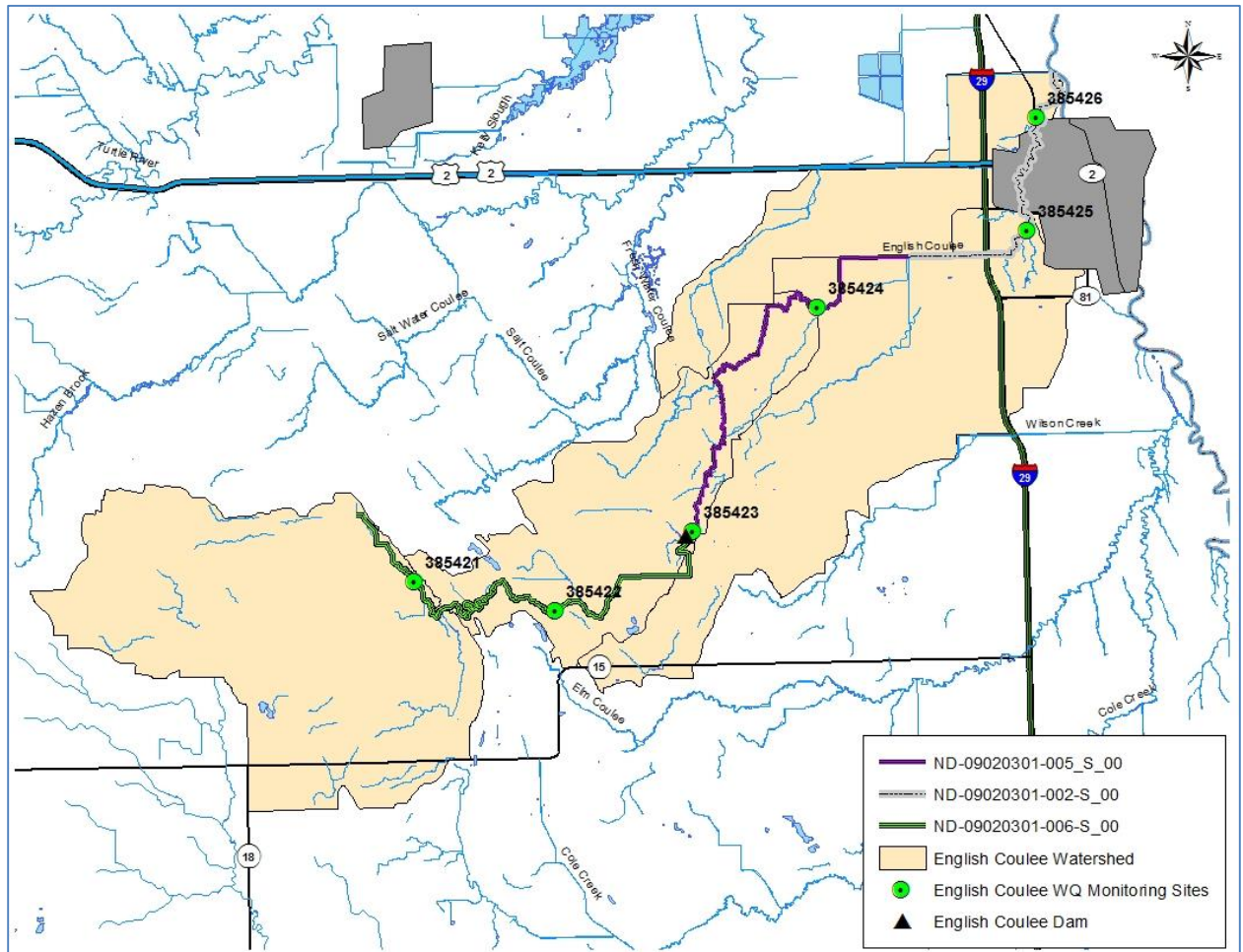


Figure 2. Water Quality Sampling Sites and Impaired Segments in the English Coulee Watershed.

Rapid Geomorphic Assessment (RGA)

The Rapid Geomorphic Assessment (RGA) method was used to evaluate the channel-stability conditions and stage of channel evolution of the mainstem English Coulee using the Channel-Stability Ranking Scheme. The RGA uses diagnostic criteria of channel form to infer dominant channel processes and the magnitude of channel instabilities through a series of nine criteria. Evaluations of this sort do not include an evaluation of the watershed or upland conditions; however, stream channels act as conduits for energy, flow and materials as they move through the watershed and will reflect a balance or imbalance in the delivery of sediment. The RGA provides a rapid characterization of stream stability conditions.

The RGA procedure for the English Coulee consisted of three steps completed at each site:

1. Determine the “reach”. The “reach” is described as the length of channel covering 6-20 channel widths, and thus is a scale dependent and covers at least two pool-riffle sequences.
2. Take photographs looking upstream, downstream and across the reach; for quality assurance and quality control purposes. Photographs are used with the RGA forms to review the field evaluations
3. Make observations of channel conditions and diagnostic criteria listed on the channel-stability ranking scheme.

A field form containing nine criteria was used to record observations of field conditions during the RGAs. Each criterion was ranked from zero to four and all values summed to provide an index of relative channel stability (the higher the number the greater the instability). Sites with values greater than 20 are considered unstable, while stable sites generally rank 10 or less. Intermediate values denote reaches of moderate instability. The process of filling out the form enables the final decision of “Stage of Channel Evolution.” For purposes of the English Coulee Water Quality and Watershed assessment, sites with total scores of 0 to 10 are considered stable and sites with scores of 20 to 30 are unstable, recognizing that scores which fall in the range of 10 to 20 have moderate instability and will rely on specific assessment values to determine the trend toward improvement or greater instability.

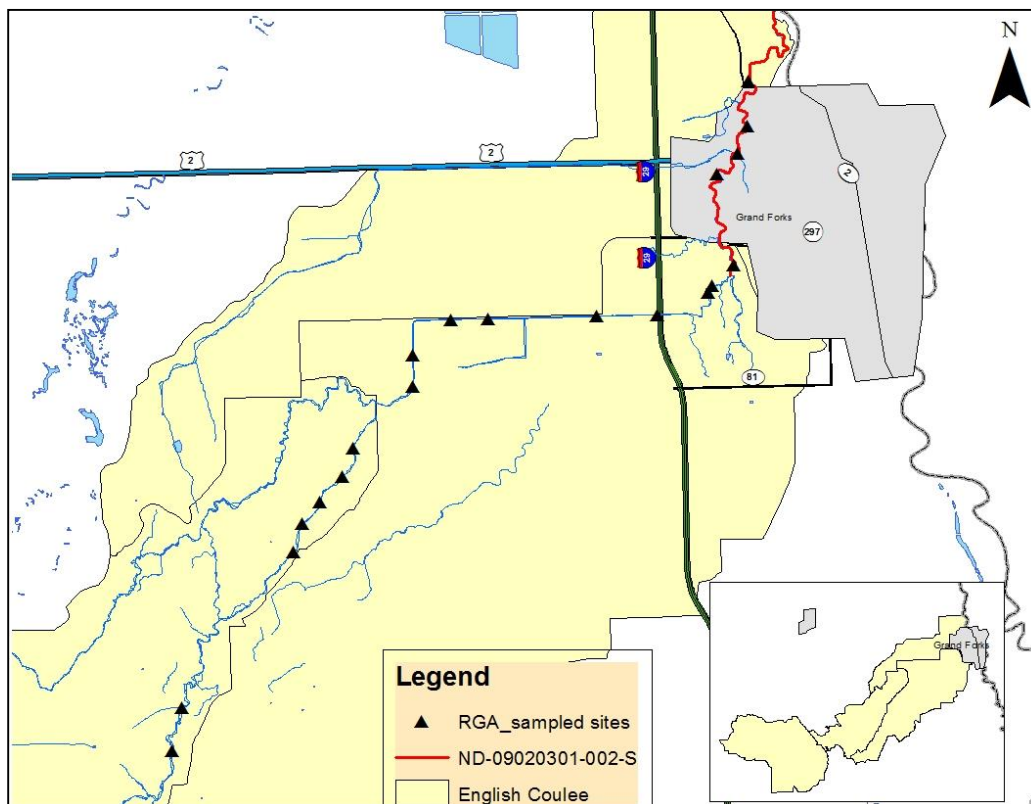


Figure 3. Rapid Geomorphic Assessment Sites for the English Coulee.

Table 3. Rapid Geomorphic Scores for English Coulee.

0-10	10-20	20-30	Non Applicable	Total
Stable	Moderately Stable	Unstable		
3	6	7	5	21
14%	29%	33%	24%	100%

The RGA assessment conducted on English Coulee characterized the stream as moderately to highly unstable (Figure 3 and Table 3). Some of the RGA sampling sites were thrown out of the analysis due to being located in old stream channels that no longer exist and are farmed through. The RGA methodology does not characterize these sites effectively, due to the lack of channel characteristics and geomorphology that form the nine criteria questions of the RGA assessment.

Macroinvertebrate Index of Biological Integrity (IBI)

Aquatic macroinvertebrates are the most common organisms used in water quality assessments because: 1) they are extremely common; 2) they exhibit high diversity rates; 3) they are fairly sedentary in any given waterbody; 4) they are rapid colonizers; 5) they exhibit variability in tolerance values; and 6) they are extremely vital links in the transfer of energy through the food web. Human disturbance of streams and watersheds alter key attributes of the aquatic environment, (i.e., water quality, flow regime, habitat structure) which elicits a response from the macroinvertebrate community and can decrease biotic integrity. Changes in species composition such as this can easily be detected through biological monitoring using macroinvertebrates as indicators of water quality.

The North Dakota Department of Health (NDDoH) has developed an index of biotic integrity (IBI) based on aquatic macroinvertebrate data for the Northern Glaciated Plains Ecoregion 46.

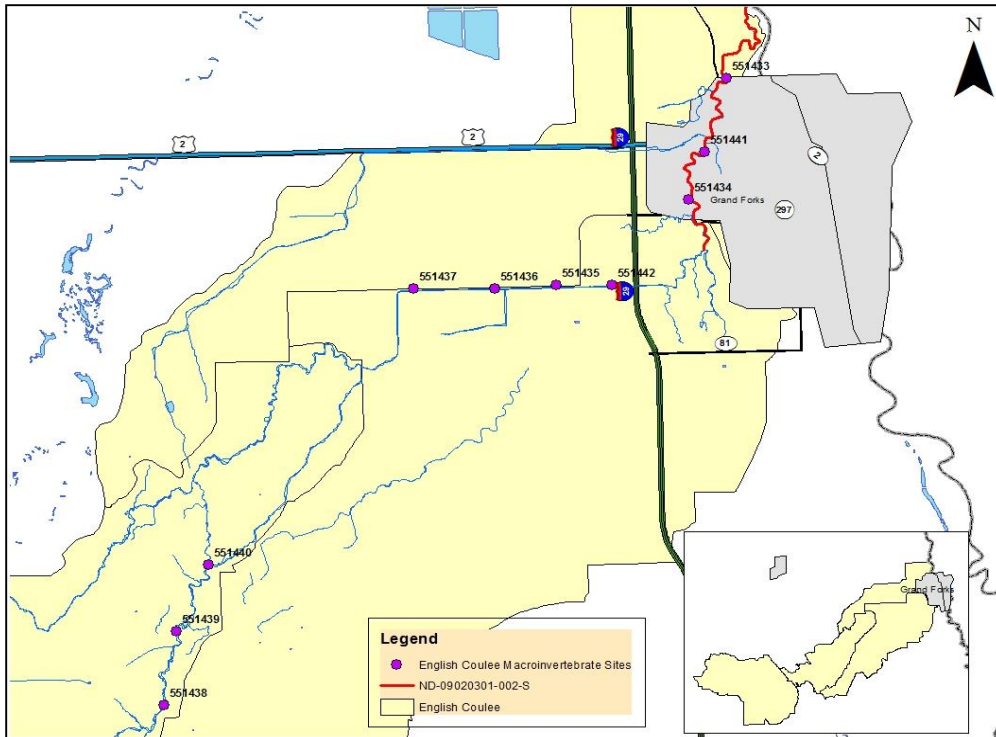


Figure 4. English Coulee Macroinvertebrate Sampling Sites.

Table 4. Macroinvertebrate Site IBI Scores for the English Coulee.

Site	Sample Date	IBI Score
551433	9/14/2009	22
551434	9/14/2009	21
551435	9/14/2009	11
551436	9/14/2009	11
551437	9/14/2009	36
551438	9/14/2009	17
551439	9/14/2009	36
551440	9/14/2009	33
551441	9/15/2009	17
551442	9/15/2009	24

Table 5. Threshold Index of Biotic Integrity Values for the Northern Glaciated Plains Ecoregion 46.

	Least Disturbed	Moderately Disturbed	Most Disturbed
IBI Score	>70	≤ 70 and ≥ 59	< 59

Macroinvertebrate data was collected at ten sites within the English Coulee mainstem in 2009 (Figure 4). The macroinvertebrates were identified, counted, and given an IBI score (Table 4). The macroinvertebrate data collected from English Coulee was then compared to standardized metric scores on a scale of 0 to 100 (Table 5). The Macroinvertebrate IBI

scores suggest that the English Coulee's macroinvertebrate community is impaired, displaying a lack of diversity and presence water quality sensitive species (Table 4).

3.0 Project Goals and Objectives

3.1 Restoring the recreational use and aquatic life of the English Coulee to fully supporting status will always be the overall goal, however, this is hard to do in a 4 year project. Fully supporting status is the long-term goal for the English Coulee watershed. With that said, the main goal for this project, and short-term goal for the English Coulee watershed, is to achieve an improving trend for recreational use and aquatic life through implementation of BMPs. Secondly, educate the public on the relationship between healthy soils and water quality through education and demonstrations of BMPs.

3.2 Objectives and Tasks

Objective 1:

Manage the implementation of BMPs in the project area and coordinate outreach events in the county.

Task 1:

Employ a part-time Watershed Coordinator and provide administrative oversight and support to ensure the completion of project as planned.

Product: One part-time Watershed Coordinator to oversee the project. (Coordinator will split time 50/50 with the Upper Reaches of the Turtle River Watershed Project)

Cost: \$163,621.50 (Salary/Fringe, travel, training, equipment, telephone, and supplies for 4.5 years)

Objective 2:

Improve the trend for E. coli bacteria concentrations that would result in all sampling sites being fully supporting but threatened throughout the sampling season. Achieve an improving trend in the macroinvertebrate community within the English Coulee.

Task 2:

Implement 1000 acres of cover crop seeded on farmland to maintain diversity, cycle nutrients, provide soil protection, and provide extended forage on the landscape for livestock operations.

Product: 1000 acres of cover crops

Cost: \$20,000 (4.5 year span at \$20/acre)

Task 3:

Implement three prescribed grazing plans for a total of 500 acres along with 20,000 feet of fencing, 1,000 feet of pipeline, and three watering tanks to have a complete systems approach. Implement 50 acres of access control/use exclusion (livestock only).

Product: 500 acres of prescribed grazing, 17,000 feet of fencing, 1,000 feet of pipeline, three watering tanks, and 50 acres of access control/use exclusion.
Cost: \$2500.00 for prescribed grazing, \$23,000.00 for fencing, \$3000.00 for pipelines, \$6800.00 for watering tanks, and \$1000.00 for access control/use exclusion. Total cost over 4.5 years is \$36,000.00

Task 4:

Implement 5 septic system replacements.

Product: 5 new septic systems
Cost: \$42,500.00 (4.5 year span)

Objective 3:

Increase producer and landowner as well as the general public of Grand Forks County understanding and awareness of water quality issues in the area and sustainable land management alternatives for addressing those water quality issues and other resource concerns. All I&E efforts will coordinate with the Upper Reaches of the Turtle River Watershed Project.

Task 5:

Host an annual field workshop that showcases targeted BMPs to gain a better understanding of land management and the effects on water quality within the English Coulee (Table 9).

Product: 5 field workshops promoting BMPs in sustainable agricultural practices
Cost: \$3200.00 (Speaker fees, travel expenses, educational materials, advertising over a 4.5 year span)

Task 6:

Publish four quarterly newsletters with updated information related to BMPs, maintain the SCD's Facebook page with educational events and news, and maintain the SCD's webpage.

Product: Four quarterly newsletters (roughly 2500 recipients), updated Facebook page and website.
Cost: \$0.00 (This is already part of the operations set forth in the project plan for the SCD)

Task 7:

Coordinate in an ongoing demonstration plot in partnership with a local landowner and the University of North Dakota and tours already in place with the Turtle River Watershed Project that showcases no-till practices along with cover crop use. This demonstration is monitoring input costs, yields, and soil testing.

Product: 2.5 years of participation in the demonstration site and tours that showcase this site

Cost: \$0.00 (This task is already covered under the Turtle River Watershed project.)

Task 8:

Participate in outreach activities such as annual township meetings and local workgroup meetings to give progress reports and available technical and financial assistance within the English Coulee watershed.

Product: Coordinator will attend four annual township meetings and five local workgroup meetings from 2016-2020.

Cost: \$0.00 (The travel cost is covered by the SCD to attend these meetings.)

3.3 Milestone Table of Outputs and Responsible Agencies

See Milestone Table in Appendix C

3.4 Environmental Permits

All necessary permits will be acquired for this project. These may include CWA Section 404 permits and NDPDES permits. The project sponsor will work with NDDH to determine if National Pollution Elimination System permits are needed for the proposed projects. The State Historic Preservation Officer will be consulted regarding potential cultural resource affects.

3.5 Lead Project Sponsor

The Grand Forks County Soil Conservation District (GFCSCD) will be the lead sponsor of this project. The GFCSCD is overseen by a five member board of supervisors, who are local landowners. The GFCSCD has annual and long range goals already in place for the resources in Grand Forks County and works with the local NRCS field office, in which water quality and quantity is a priority. The GFCSCD also has the personnel, space, and equipment in place as well as the authority to manage funds.

3.6 Roles and Responsibilities for Proper Operation and Maintenance

All projects will follow standards and specifications under the NRCS guidelines for proper operation and maintenance according to each specific BMP or other standard that is approved by the North Dakota Department of Health. Project staff will conduct compliance reviews to verify proper BMP installation prior to the issuance of cost-share assistance as well as conduct periodic follow-up reviews during the project period to document proper operation and maintenance.

4.0 Coordination Plan

4.1 The Grand Forks County Soil Conservation District (SCD) is the lead project sponsor for the project. The SCD is responsible for the day-to-day oversight of the project objectives and tasks and will provide assistance and information to land owners for the enhancement of natural resources. Cooperating agencies include: Natural

Resources Conservation Service (NRCS), North Dakota Department of Health (NDDoH), North Dakota Game and Fish (NDGF), Farm Service Agency (FSA), North Dakota State University Extension Service (NDSU-Extension), the University of North Dakota (UND), the Grand Forks County Water Board, and the City of Grand Forks.

1. Grand Forks County Soil Conservation District (SCD)-The SCD is the lead project sponsor and will maintain responsibility of project administration, landowner contacts, producer contracts, and water quality education.
2. Natural Resources Conservation Service (NRCS)-The NRCS will provide day-to-day assistance in conservation planning, plan writing, contract writing, technical assistance, and O&M guidance. NRCS will conduct quality review and compliance checks on BMPs designed by NRCS. Environmental Quality Incentive Program (EQIP) and Conservation Stewardship Program (CSP) funds will also be used as available and appropriate. Technical assistance will be provided for outreach and educational events.
3. North Dakota Department of Health (NDDH)-The NDDH will oversee 319 funding and ensure proper management and expenditures of funding. NDDH staff will also provide technical training and guidance through the project activities. NDDH will assist NRCS and SCD personnel in review of O & M requirements for Section 319 funded BMPs.
4. North Dakota Game and Fish (NDGF)-NDGF will be asked to provide technical assistance as needed. Information regarding aquatic life and the Outreach Biologist will be used for educational events if needed.
5. Farm Service Agency (FSA)-Programs available through FSA will be pursued. The Conservation Reserve Program (CRP) will be utilized to maximize financial resources as well as BMP acres. Technical assistance will be provided in the form of farm records.
6. North Dakota State University-Extension (NDSU-Extension)-Research, outreach, and technical assistance will be provided for all stakeholders. Research findings will be requested as they pertain to priority BMPs, and extension agents will be asked to participate in public outreach events to discuss research and demonstration activities in the area.
7. University of North Dakota (UND)-Research, outreach, and technical assistance will be provided for all stakeholders. Research findings will be requested as they pertain to priority BMPs. UND is also allowing the use of a 4 acre demonstration plot showcasing no-till practices and cover crop use at no cost to the District.
8. Grand Forks County Water Board-Documentation and technical assistance will be provided as needed. The Water Board is in charge of the English Coulee Diversion project and will provide information on water movement and historical documentation if needed by the Coordinator. The Water Board may be asked to speak at public outreach events.
9. City of Grand Forks-Outreach, technical assistance, and financial assistance will be provided. The City of Grand Forks has been very involved in the urban area of the English Coulee and will continue to do projects and outreach activities directly related to the English Coulee. Financial assistance will be provided for rural BMPs on an annual basis contingent upon their financial budget.

4.2 The Grand Forks County Soil Conservation District is locally led by landowners who realize a need to continue to support water quality projects. Past and current projects the SCD has been involved in include the Turtle River Watershed Assessment, Larimore Dam Reservoir Assessment, the English Coulee Watershed Assessment, and most recently, the Upper Reaches of the Turtle River-North and South Branch Watersheds Project. This proposal for implementation reflects the desire of the board to address resource concerns within their county.

The English Coulee has a history of being in the public's eye. There has been much discussion on ways to address the water quality of this stream, but coordination and funding has made tackling the problem a challenge. The City of Grand Forks as well as the land owners within the rural portion of the watershed share the board's desire to address the water quality concerns. Septic system replacements, cover crops, and grazing systems all have sparked interest in stake holders.

4.3 This project will utilize other sources of funding as much as possible and not solely rely on 319 funding. NRCS, FSA, and Save Our Lakes cost-share programs will be utilized when applicable. The City of Grand Forks will also be providing a cash-match up to \$10,000.00 per year contingent upon budgeting for the duration of the proposed project.

4.4 The English Coulee is unique in the fact that it begins in the rural portion of Grand Forks County and flows directly through the city of Grand Forks before discharging into the Red River of the North. The English Coulee had its original channel altered and a diversion installed after the major flood of 1997 to protect the city of Grand Forks. At times, the city faces stagnant water and areas of overgrown cattails. The stench from the water is often times overpowering, and it is a common complaint among the citizens of Grand Forks. As such, the city of Grand Forks is continually using resources to try to combat some of the concerns within city limits. In 2014, a stretch of the Coulee had a major sedimentation removal project take place. Other efforts have included collaboration with the Park District and the University of North Dakota, through which the Coulee runs directly. There have been small restoration areas along the riparian area of the Coulee to try to remove some of the cattails and replant native vegetation. The Parks District has also maintained a restored area near a city park to keep the cattails out. Most recently, a student group on the UND campus has formed that solely focuses on the cleanup of the English Coulee within UND's boundary. An upper level course within the geology department at UND was also added to the curriculum for students to try to address some of the issues along the Coulee. Discussions for educational events regarding storm water and other urban runoff along with fertilizer use has been in the works, but no event has occurred. The city of Grand Forks is restricted to the urban

portion of the English Coulee, so the proposed project would strongly support their efforts in the rural areas.

5.0 Evaluation and Monitoring Plan

The North Dakota Department of Health staff will develop a quality assurance project plan for the project after the final project implementation plan is approved. Monitoring will follow the guidelines set forth by the QAPP.

6.0 Budget

See attached budget in Appendix B

7.0 Public Involvement

7.1 The success of any project relies on the participation of those involved. This proposed implementation project is no different. The SCD works very hard to keep the public informed and involved throughout the year using a variety of communication forums. The SCD publishes a quarterly newsletter that includes available assistance, educational material, and upcoming events. It also manages a website where up to date documents can be found about the activities going on in the county where it relates to local resources. A Facebook page has also been created and is used on a weekly basis to get notices and information out to its followers. Staff from both the SCD and NRCS host and participate in locally led meetings involving agriculture and conservation groups. One of the biggest successes for the District has been the annual soil health workshops held over the past three years. The last meeting held in 2014 hosted 170 participants, most of whom are producers. Grand Forks County is also well known for our Eco-Ed camps. Over 600 7th graders participate each year for these one day camps that are held for eight days in September. Students learn about the natural resources around them, and the scores between their pre and post-tests always show a great increase. The field office staff along with the board attends the annual International Crop Expo, which draws in thousands of people. Purchasing a booth space allows the staff and board to visit with producers and landowners about programs and educational topics that are going on throughout the county. The Farmers Appreciation Banquet also allows this same opportunity. The current watershed coordinator has been a guest lecturer on the campus of UND, which provides a whole new target audience to get discussion and feedback about resource concerns. Youth education events are attended as well including water festivals, and library education days.

Appendix A

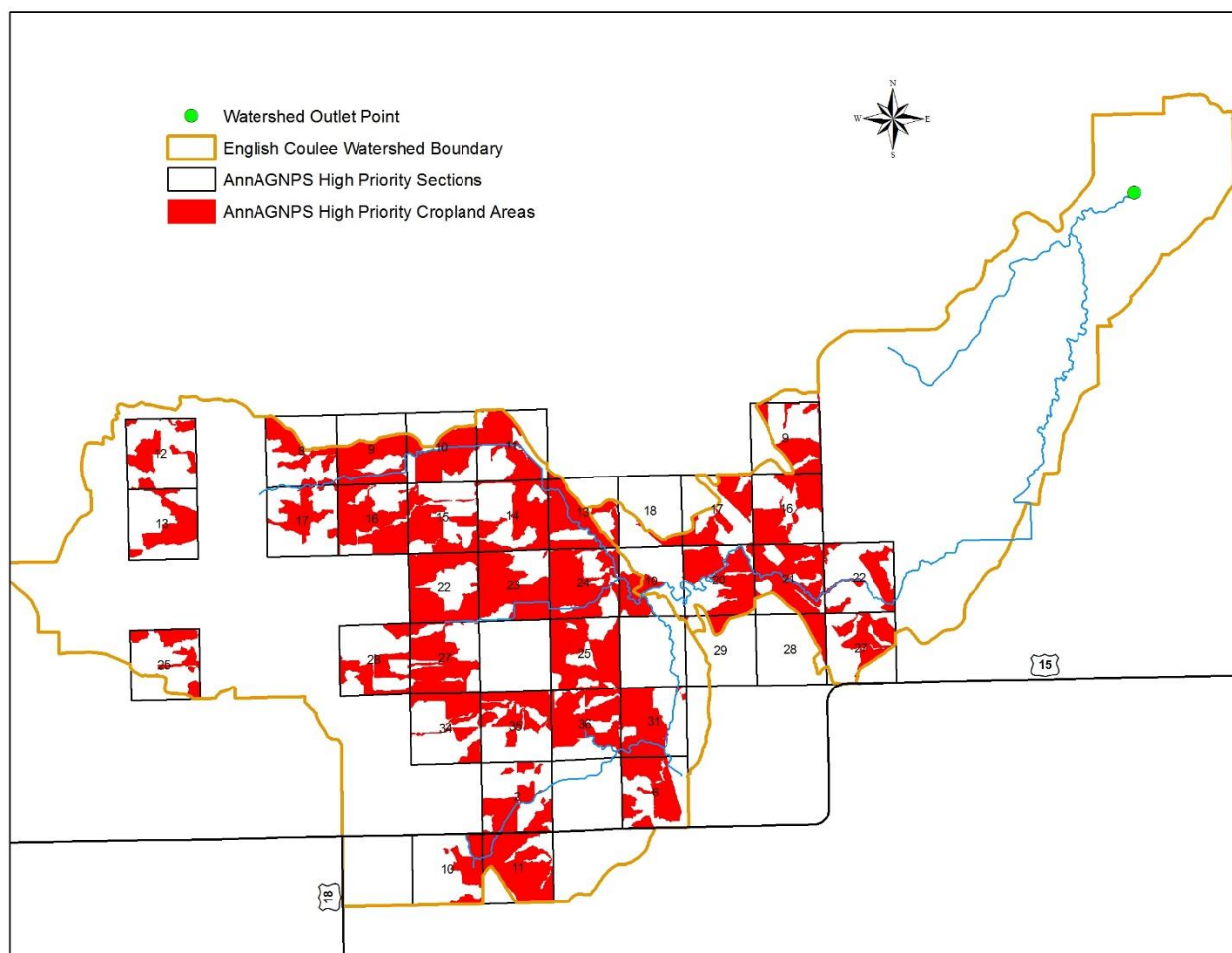


Figure 4. High Priority Cropland in the English Coulee Watershed

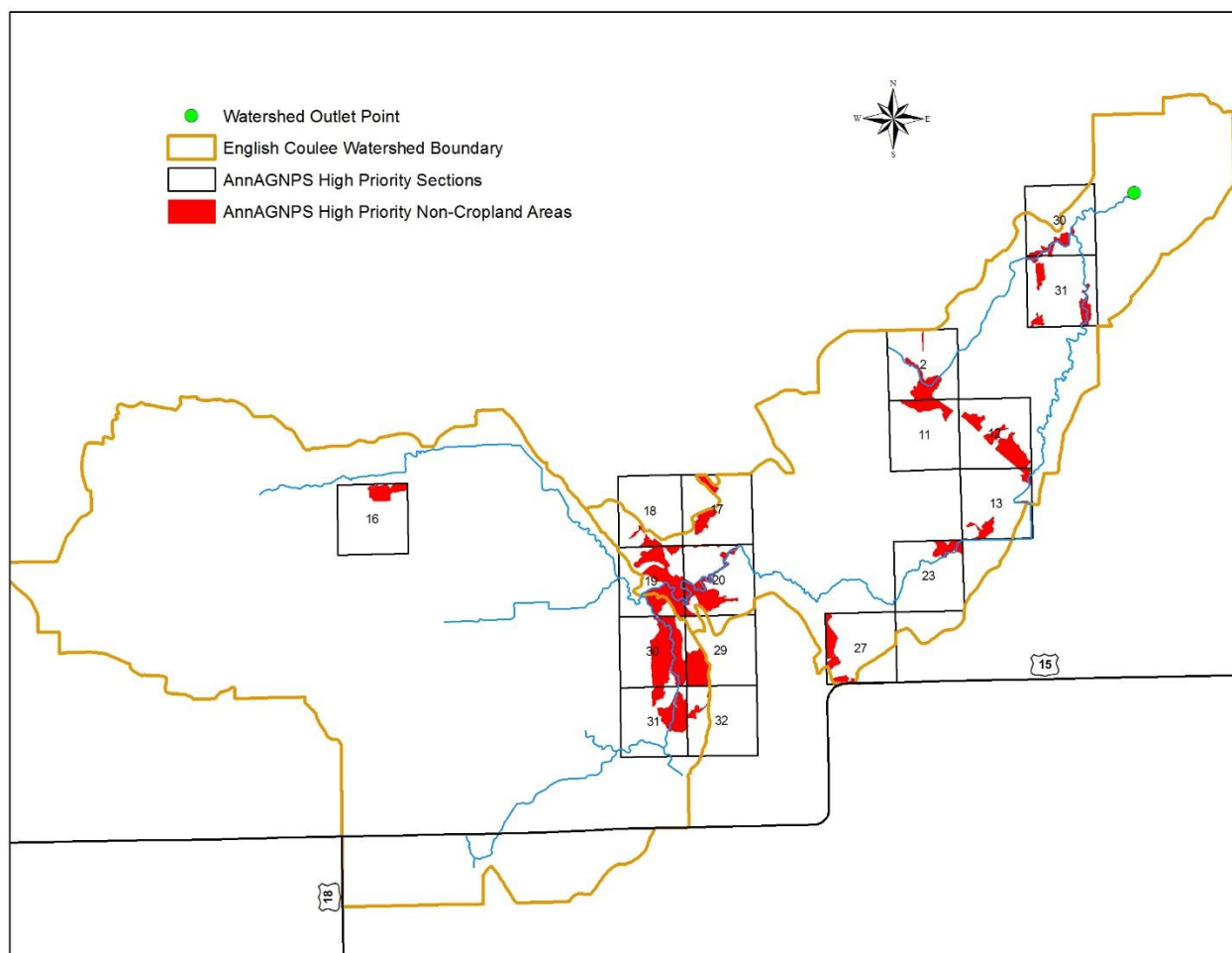


Figure 5. High Priority Non-Cropland in the English Coulee Watershed

Appendix B

Table 6: Budget for English Coulee Implementation Phase 1

Part 1: Funding Sources						
	2016	2017	2018	2019	2020	Total
EPA SECTION319 FUNDS						
1) FY2016 Funds (FA)	\$15,088.90	\$29,186.80	\$26,642.80	\$27,268.80	\$42,070.60	\$140,257.90
Subtotals	\$15,088.90	\$29,186.80	\$26,642.80	\$27,268.80	\$42,070.60	\$140,257.90
OTHER FEDERAL FUNDS (NRCS TA)	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$12,500.00
STATE/LOCAL MATCH						
1) Landowner match (FA)	\$6,400.00	\$11,200.00	\$8,200.00	\$8,400.00	\$5,200.00	\$39,400.00
2) Local SCD (TA&FA)	\$5,792.60	\$11,991.20	\$12,295.20	\$12,579.20	\$24,580.40	\$67,238.60
3) Local Match (City of Grand Forks)*	\$10,000.00	\$10,000.00	\$10,000.00	\$10,000.00	\$10,000.00	\$50,000.00
Subtotals	\$22,192.60	\$33,191.20	\$30,495.20	\$30,979.20	\$39,780.40	\$156,638.60
Total Budget	\$39,781.50	\$64,878.00	\$59,638.00	\$60,748.00	\$84,351.00	\$309,396.50

*Financial Assistance from the City of Grand Forks will be used as a 20% match for BMPs within the English Coulee Watershed and is contingent on their yearly budget. Excess match will be used at 60% match towards BMPs within the English Coulee if 319 funds are depleted.

Table 7

English Coulee Implementation Phase 1								
Part 2 - Funding								
OBJECTIVE 1: Watershed Coordinator to administer project.						TOTAL	Cash/In-Kind	319
Section 319/Non-federal Budget	2016 (6 months)	2017	2018	2019	2020	COSTS	Match*	Funds
PERSONNEL/SUPPORT*								
1) Salary/Fringe	\$13,156.50	\$27,013.00	\$27,713.00	\$28,413.00	\$58,326.00	\$154,621.50	\$61,848.60	\$92,772.90
2) Office Rent/Utilities								
3) Travel	\$500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$1,500.00	\$6,500.00	\$2,600.00	\$3,900.00
4) Equipment/Supplies	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$1,250.00	\$500.00	\$750.00
5) Training	\$0.00	\$175.00	\$175.00	\$175.00	\$175.00	\$700.00	\$280.00	\$420.00
6) Telephone	\$50.00	\$90.00	\$100.00	\$110.00	\$200.00	\$550.00	\$220.00	\$330.00
Subtotals	\$13,956.50	\$29,028.00	\$29,738.00	\$30,448.00	\$60,451.00	\$163,621.50	\$65,448.60	\$98,172.90
OBJECTIVE 2: Implementation of BMP's**								
Task 2: Cover Crop Seed	\$2,500.00	\$4,000.00	\$4,000.00	\$4,500.00	\$5,000.00	\$20,000.00	\$12,000.00	\$8,000.00
Task 3: Livestock Grazing improvement/fencing/pipeline	\$5,000.00	\$7,000.00	\$8,000.00	\$8,000.00	\$8,000.00	\$36,000.00	\$21,600.00	\$14,400.00
Task 4: Septics	\$8,500.00	\$17,000.00	\$8,500.00	\$8,500.00	\$0.00	\$42,500.00	\$25,500.00	\$17,000.00
Subtotals	\$16,000.00	\$28,000.00	\$20,500.00	\$21,000.00	\$13,000.00	\$98,500.00	\$59,100.00	\$39,400.00
OBJECTIVE 3: Education and outreach***								
Task 5: Summer field tours	\$450.00	\$650.00	\$700.00	\$700.00	\$700.00	\$3,200.00	\$1,280.00	\$1,920.00
Task 6: Newsletter/facebook/website								
Task 7: Demonstration plot								
Task 8: Outreach activities (Annual meetings)								
Subtotals	\$450.00	\$650.00	\$700.00	\$700.00	\$700.00	\$3,200.00	\$1,280.00	\$1,920.00
ADMINISTRATIVE								
Secretarial	\$75.00	\$150.00	\$150.00	\$150.00	\$150.00	\$675.00	\$270.00	\$405.00
SCD/Coordinator Meetings	\$0.00	\$150.00	\$150.00	\$150.00	\$150.00	\$600.00	\$240.00	\$360.00
Subtotals	\$75.00	\$300.00	\$300.00	\$300.00	\$300.00	\$1,275.00	\$510.00	\$765.00
CASH/IN-KIND****	\$6,800.00	\$4,400.00	\$5,900.00	\$5,800.00	\$7,400.00	\$30,300.00	\$30,300.00	
FEDERAL FUNDS	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$2,500.00	\$12,500.00		
TOTAL 319/NON-FEDERAL BUDGET	\$39,781.50	\$64,878.00	\$59,638.00	\$60,748.00	\$84,351.00	\$309,396.50	\$156,638.60	\$140,257.90

*Personnel/Support is being split 50/50 with the Upper Reaches of the Turtle River-North and South Branch Watershed Project for the years of 2016-2020

**319 funding will provide 40% cost-share, while the city of Grand Forks will provide 20% cost-share. The landowner will be responsible for the remaining 40% of the total cost.

***Tasks showing no cost indicate fields that are already covered by the Grand Forks SCD or the Upper Reaches of the Turtle River Watershed Project.

****This in-kind indicates the excess funding provided by the city of Grand Forks, which will be used to cost-share BMPs if 319 funds are depleted.

Table 8: Priority BMP Table

Task 2 Cover Crop*
340-Cover Crop seed
Task 3 Livestock Grazing Improvement*
614- Trough/Tank
642- Well
516- Pipelines
528A- Prescribed Grazing
382- Fencing
472-Access Control/Use Exclusion (Livestock Only)
Task 4 Septic Systems Renovations**
019- Septic System Renovation
*All systems will be installed according to NDDOH guidelines for BMP cost share
**Other eligible BMP under the NPS program may be used as needed

Table 9: Budget table for Annual Field Workshops (Task 5)

	2016	2017	2018	2019	2020	Totals
Speaker Fees	\$0.00	\$150.00	\$150.00	\$150.00	\$150.00	\$600.00
Speaker Travel Expenses	\$0.00	\$150.00	\$150.00	\$150.00	\$150.00	\$600.00
Meals*	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00	\$1,250.00
Advertising	\$200.00	\$100.00	\$150.00	\$150.00	\$150.00	\$750.00
Total	\$450.00	\$650.00	\$700.00	\$700.00	\$700.00	\$3,200.00
*319 funds will NOT be used for meal expenses.						

Appendix C

Table 10: English Coulee Implementation Project

Milestone Table									
	Task/Responsible Organization	Output	Quantity	Year 1	Year 2	Year 3	Year 4	Year 5	
Objective 1	Grand Forks County SCD-Lead Sponsor								
Task 1	Employ Full-Time Watershed Coordinator		1	X	X	X	X	X	
Objective 2	Watershed Coordinator, NRCS, Local Landowners								
Task 2	Cover Crop BMP	Reduced nutrients and increased grazing away from river	1000 acres of cover crop use	100 ac	200 ac	200 ac	250 ac	250 ac	
Task 3	Livestock BMP	Prescribed Grazing	500 ac	75 ac	125 ac	100 ac	100 ac	100 ac	
		Fencing	17,000 ft	2,000	4000 ft	3,000 ft	4,000 ft	3,000 ft	
		Pipeline	1,000 ft	—	250 ft	250 ft	250 ft	250 ft	
		Watering Tanks	3	—	1	—	1	1	
		Use Exclusion/Access	50 ac	—	25 ac	—	25 ac	—	
Task 4	Septic System Replacement	Reduction in E. coli	5	1	2	1	1	—	
Objective 3	I/E SCD, NRCS, NDSU Extension, and UND								
Task 5		Annual Field Workshops	5	1	1	1	1	1	
Task 6		Quarterly newsletters (continuous updated Facebook/webpage)	20 (2500 recipients)	4	4	4	4	4	
Task 7		Demonstration Site Tours	5 years of no-till, crop rotation demo site	This will be ongoing throughout the project. Planning, sampling, and implementing will be done throughout the Turtle River Watershed Project. Annual tours will take place at this site through the duration of this project.					
Task 8		Public Outreach through annual meetings	150 participants	This will be ongoing throughout the project. The Watershed Coordinator will participate in annual township meetings as well as local work group meetings.					

NRCS will provide technical assistance for BMPs and educational activities.
Landowners will provide a 40% match to implemented BMPs on their land.
NDSU Extension will provide up-to-date research and information at workshops and tours.
UND will provide local research findings and information at workshops and tours.
The ND State Health Department will provide oversight of the project.